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Unnatural Gardening.

WHEN Hamlet counseled the players "to hold the mirror up to nature," he hardly meant that in their acting they should abandon themselves to unpremeditated impulse. The most natural acting is the most studied art. So a natural garden is not one given over to the spontaneous and uncontrolled growths of nature, but one in which a finished artist intensifies the effects that nature produces by emphasizing a feature here and there and eliminating every element that distracts from the central purpose of the scene. It is our belief that landscape-art reaches its highest development when it deals successfully with the fundamental and permanent features of scenery, and with a broad handling of a few simple elements presents typical pictures which are instinct with the poetry of nature. In sincere work of this sort there will be no labored attempt to conceal the hand of man. An affectation of mere rusticity would strike a jarring note like any other sham. Any landscape to be enjoyed as a work of art must have artificial elements, and the severest taste will never disapprove of good honest roads and walks with trim turf borders simply because they are non-natural. Indeed, the artificial construction may be so arranged as to heighten the charm of the picture and add to our appreciation of the creative genius of its designer.

Of course, there are other fields of garden art, and a catholic taste has no controversy with any true art. There are contracted spaces to which an ornate and strictly artificial style is adapted. There are architectural terraces and monumental buildings which need the lines of formal planting to supplement and complete them. Along a stately promenade like the Riverside Drive in this city, where the foreground is strictly defined by a parapet, there is an opportunity within this limit for statues and fountains and floral embellishment of the most sumptuous and elaborate kind, and this would serve as a fitting framework for the prospect across the broad river with the forest-crowned cliffs and the noble sky-line beyond. Many other places might be named where so-called decorative gardening and geometrical arrangements of flowering plants would be desirable, and wherever a real artist gives examples of his skill in this direction he commands the gratitude of every one interested in garden art.

All this we have stated before so often and with such fullness of detail that it ought not to be necessary to repeat it. We believe that formal gardening is a legitimate form of art, but it does not follow that we approve of all formal gardens. A design conceived by an artist with a refined sense of color and form, and with constructive ingenuity, is one thing, but a pattern-bed, which is ugly in line and crude in color, is quite another. Every one has seen geometrical flower-beds of such elaborate pattern that they never can be properly executed with plants as materials. Even where they are not intrinsically bad—that is, where the figure is pleasing and the colors are not constantly at war with each other—they are often placed where they are out of harmony with the general design and with the special features about them. Wherever in a public garden the recognized canons of art are violated it is the province of a journal devoted to the subject to criticise such displays, and we have not hesitated to appeal to those in authority and who are, therefore, in a substantial way educators of the people, to furnish examples of gardening which will not offend the purest taste. But there are worse sins than those we have named, and there is no occasion here to characterize such efforts as the portraits of eminent men or the maps of different states wrought out on the turf with Houseleeks and Echeverias. Such subjects, with the imitations in color of flags and banners, badges and mottoes, are too trivial for serious consideration. They discredit the very name of garden art. Wherever used they can only disfigure our parks, and are accurately described as horticultural abominations.

Of course, shams of this sort cannot be spoken of with any toleration. They are on a level with the Weeping Willows made of human hair, which we sometimes see. There is no more excuse for permitting their use in a public park than there would be for decorating a city hall with the portrait of the Mayor done with little sea-shells. In regard to this spurious art we are led to explain our position once more because so intelligent a person as the editor of *The Independent* evidently conceives that our sole objection to it is based on the fact that "these floral pictures are not naturalistic," and on this assumption he argues that the same objection lies against every cultivated plant and gardening of all kinds. This statement is in the main true; but we have often argued that even in the natural treatment of a landscape there must be artificial elements which ought to be frankly used. We advocate formal gardening within proper restrictions, for the very reason that it is formal. When we protest against wall-paper designs it is not because they are unnatural, but because they violate artistic principles in form and color and location. We need not here repeat the specific exceptions we have taken against some of the displays in the Boston Public Garden and certain western city parks, but it ought to be stated that there are in our view serious objections to these works from economic and other points of view aside from the fact that many of them are puerile, others are discordant in color or whimsical in form, and nearly all of them are badly placed.

It is argued in favor of these flower-beds that "the taste of the common people approves them." No doubt, there are many persons among those whom the editor of *The Independent* classifies as "common people" who agree with him in admiring this so-called garden art. It is true, also, that there are many persons who take greater delight in the chromo-lithograph of a horse-race than in one of Rubens' canvases, and yet when a city government founds an art gallery for public enjoyment and instruction it does not fill it with chromos. There are people to whose ears the melody of Grandfather's Clock is more pleasing than the Tannhäuser Overture, but when a city furnishes music for the people its aim should be to furnish good music. When a public building or statue or monument is to be erected, the authorities are justly criticised if

they do not entrust the work to artists of the first rank. Boston has wisely engaged Mr. Olmsted to design her public parks. Why not consult an artist of equal rank to furnish some permanent scheme for treating her Public Garden? Men entrusted with the expenditure of the people's money should aim to improve the public taste, if it is bad, rather than pander to it.

We are by no means convinced, however, that a majority of the common people, whoever they may be, approve this kind of gardening. There is nothing more snobbish or vulgar than the notion that the best art is beyond the appreciation of the great bulk of the people. They like good architecture, good pictures, good music, and whenever they have the opportunity to admire a good garden they show their appreciation of it. When Boston was full of delegates to the Christian Endeavor Convention the Public Garden was thronged, as a matter of course, with strangers, who inspected with interest the reproduction of their emblems on the grass. It is probable that they would have had greater admiration for an honest effort at a genuine garden. Many of them have taken pains to assure us of this fact by letter, and one lady expressed her bitter disappointment at finding "floral fashions in Boston which would not be tolerated" in the Kansas town where her home is. Really, the bulk of our people despise shams and artifice more and more. No one now thinks of sending to a lady a heart constructed of white carnations and pierced with an arrow of crimson ones. Floral designs imitating fiddles and bells and pieces of furniture have given place to simpler arrangements of more harmonious color. The same change is coming in the treatment of our pleasure-grounds. The picture of four men of life-size rowing in a boat will not again be seen spread out in gaudy colors on the turf of any American park, and it is to be hoped that the famous American Eagle with a glass eye, and the Gates Ajar, constructed with bits of blue stone to furnish a detail when flowers of that color were not at hand, have both passed away forever.

The English Oak.

OF course there is a great diversity of size and habit in the fifty species of Oak which grow in the United States, and several of them rank among the most dignified and majestic of our native trees. The best of them require centuries of growth before they attain their noblest expression, so that it is true, as has been stated, that very few Americans have ever seen a White Oak in its full expansion grown to maturity in the open ground. The difference in character between what Gilpin styles "an insulated Oak which has developed without any lateral pressure" and one which has struggled sturdily upward among other trees in the forests is very marked. There are Live Oaks in the south which have had free chance to show what they can do when they had an opportunity to reach outward as well as upward, and we have already expressed the opinion that one of these trees at Drayton Manor, on the Ashley River, South Carolina, is the most massive, symmetrical and imposing tree in eastern North America. The common British or Royal Oak resembles our White Oak in habit of growth, and many of these trees are to be found in parks and open forests of England, where they have been undisturbed since the time of the Druids, and their sturdy trunks, wide-spreading branches and venerable age make them the most impressive features of the scenery, so that it is little wonder that they are regarded with a feeling akin to reverence. The illustration on page 365 shows a group of these trees, with the usual undergrowth of Ferns, in Sherwood Forest, which has been a royal hunting-ground from time immemorial, famed in romance as the home of Robin Hood, and noted for such historic trees as the Parliament Oak, the Major Oak, the Shire Oak and other celebrated specimens. These Oaks were quite as eminent for the soundness and quality of their timber as for their majestic appearance, and many of the best of them have been cut for use in public buildings. There is still in existence an autograph letter of Sir Christopher Wren to the Duke of Newcastle, in which he acknowledges the grant of certain trees from this forest to be used for rebuilding St. Paul's Cathedral after the great fire in London: "Wee must accept," writes Sir Christopher, "this season but ten of the great trees, and I presume once more to acquaint you with the scantlings of the great Beames to prevent mistake, to wit: forty-seven feet long and thirteen by fourteen inches wide at the small end, growing timber, this scantling to hold die square as neer as can be without sap." When we remember the amount of oak timber that has been used for British navies and for other construction, it is a marvel that so many of the oldest and finest trees remain in this forest unscathed, except by time.

While the English Oak is one of the noblest of trees in its native land, like many other trees from across the Atlantic, it does not succeed as well here, so that both from an economical or an ornamental point of view it is not as well worth planting as many of our native species. The ordinary variety of the British Oak, Quercus pedunculata, is a variable tree, and it has been cultivated so long that numerous quite distinct forms have been established. There are forty-five of these varieties in Kew Gardens, and some of these, like the Pyramidal Oak, for example, seem to thrive better here than the type. Since the climate of our Pacific coast resembles that of England more closely than our own, it is not improbable that the British Oak may make itself at home there. Some experiments made by Professor Hilgard a few years ago seem to show that they are likely to endure the severe droughts of a California summer, and presumably they will find more favorable conditions in Oregon and Washington. If this is true, this Oak will make a valuable addition to the timber-trees of that region where hardwoods are rare.

The Pines in a Dry Summer.

THE intense heat and drought of the past two months has driven collectors and students of plants in the Pines to out-of-the-way nooks in damp places, while the usual quota of plants is found in the ponds and marshes. One of our best collectors of flowering plants, and of material for the microscope, is a Japanese who joined our class a year ago. But for his enthusiasm I fear our weekly meetings would languish for lack of analytic material.

Among the plants now in bloom is Ludwigia alternifolia; growing in swampy places, its bright yellow flowers in the upper axils appear all summer. The roundish seed-pods are filled with tiny seeds, which, when ripe, can be sprinkled from a round hole in the top, as from a miniature pepper-box. L. hirtella is like L. alternifolia, except that the seed-pods of this species are not wing-angled and the roots are tuberous. Decodon verticillatus is quite a handsome plant, growing sometimes in rather deep water, with wand-like stems from six to eight feet in length, and clusters of pinkish-purple flowers in the axils of the upper leaves. In company with these Loosestrifes we find both species of the nearly related Meadow Beauty, Rhexia Virginica and R. Mariana, in full bloom. There are so many attractive features about these plants that one never ceases to admire them. If we open the flower-bud we find eight long golden anthers inverted and closely packed around the pistil; as the flower expands they rise and take their places jauntily in a horizontal position on top of the filaments. The urn-shaped seed-pods, too, are ornamental, and the seeds are coiled like snail-shells. All the minor details, like the bristly hairs on the leaves and the small spur at the attachment of the anthers, are wonderfully attractive under a low power of the microscope.

Two or three species of Hydrocotyle are trailing along in the moist places. Some of the plants are growing in water along the edge of the pond, while others are on comparatively dry ground. The umbels of small white flowers are on long peduncles, and often these umbels are one above the other, sometimes to the number of three or four. H. umbellata has round shield-shaped leaves, and

when it grows on the drier ground its running root-stocks are tuber-bearing, while plants in wet places are free from tubers. The Button Snakeroot, Eryngium Virginianum, is another interesting plant among the Umbelliferæ; the flowers are of a dull bluish color in round dense heads. Another species, E. yuccæfolium, is also here. This species has long, thick parallel-veined leaves which look very much like those of Yucca filamentosa. The flowering stems are taller and stouter, and the heads of the flowers are larger than those of E. Virginianum.

The Cardinal-flower is still lighting up the damp Pines with its flaming red spikes of flowers, and the less conspicuous, but pretty, blue Lobelia syphilitica is near by. Everywhere the damp Pines are redolent with Clethra, the drought and great heat not having lessened the mass of bloom. Several species of Polygala are flowering now. The bright orange heads of P. lutea are conspicuous among the tall Grasses, and so are the dense red heads of P. sanguinea. The much-branched P. fastigiata, with paler flowers, is scattered among them. The Gerardias, too, are making a fine display at this time, especially the tall purple Gerardia, its wide-spreading branches laden with large rose-purple flowers, and G. auriculata, scarcely branched at all, but full of flowers all along the axils of the stout stem.

The handsome Monkey-flower, Mimulus ringens, with mirth-provoking face-like corolla, seems to peer at us out of hidden recesses, along with the pretty Gratiola aurea, which has bright golden flowers as an offset to the rich purple of the Mimulus. Several species of Dodder are interesting studies at this time, and one can hardly count the water plants now in flower: Brasenia peltata, with dull reddish-colored flowers; the handsome Limnanthemum and the various Utricularias and Sagittarias and Eriocaulons, and the curious Valisneria spiralis, as if endowed with knowledge, so as to send the staminate flowers, which blossom beneath the water, to meet the pistillate on the surface. In the drier places we find handsome twining wild Beans with rose-colored flowers; St. Andrew's Cross, with pale yellow blossoms, and several Hypericums, with deeper yellow flowers. Asters and Golden-rods are telling us that autumn will soon be with us with its rich wealth of color.

Vineland, N. J. *Mary Treat.*

Notes on some Arborescent Willows of North America.—I.

SALIX NIGRA, Marsh.—The western limit to the range of this species in the Mississippi Valley is not definitely known. It is reported as common in the eastern portions of the states of North and South Dakota, Nebraska, Kansas and the Indian Territory, while, on the other hand, it is not known to occur anywhere in the Rocky Mountain region; it has not been found in the Black Hills, and is replaced exclusively along the headwaters of the Platte by Salix amygdaloides. The limit will probably be found within, rather than west of, the boundaries of the states mentioned. From Louisiana it follows the Gulf coast westward, but has never been credited to Mexico. While the central plateau of the continent seems to present a barrier to the extension of S. nigra westward, a few stations at the extreme south may indicate a more or less continuous line of distribution from Texas to southern California and thence northward to the Sacramento Valley: Texas, Kerr County (Heller); southern Arizona, Fort Huachuca (Palmer, 452), and Tucson (Toumey); California, Clear Lake (Bolander) and Maryville Butes (Blankinship).*

SALIX NIGRA × AMYGDALOIDES, Glatfelter, *Trans. St. Louis Acad.*, vi.: 427 (Ap., 1894).—The easternmost stations known for Salix amygdaloides are Ithaca, New York (Professor Dudley), and Montreal, Canada (Mr. J. G. Jack). There is, therefore, a wide area in New England occupied by S. nigra without the intrusion of S. amygdaloides. Beyond the western limits of the range of S. nigra, namely, in the Rocky Mountains, from Utah to British Columbia and in Oregon and Washington, S. amygdaloides is very common and exhibits no departure from the typical form. It is only where the ranges of these two species overlap, as they do in the Mississippi Valley, that we find the intermediate forms which have been so carefully studied by Dr. Glatfelter. Bentham says that "where two supposed species grow together, intermixed with numerous intermediates bearing good seed, and passing more or less gradually from one to the other, it may generally be concluded that the whole are mere varieties of one species." The Nigra-amygdaloides intermediates present all the conditions thus specified, but, nevertheless, they are hybrids and do connect two good species. In New England, with amygdaloides absent, we have unadulterated nigra; in the far west, with nigra absent, we have pure amygdaloides, and only where these two grow together do we find the interminable confusion of intermediates. No more decisive proof of their hybrid character could be found short of the final test of growing plants from seed obtained by artificial fertilization.

SALIX WARDI, n. sp. (S. nigra, Marsh., var. Wardi, Bebb, *Flora of Washington*, 114.)—To the full description of this Willow, as at first given, it seems almost needless to add a single word unless it be to emphasize the distinctions which warrant its separation from Salix nigra. The leaves are larger, usually broader, conspicuously glaucous and prominently nerved beneath. The stipules are large, persistent, and present with a degree of constancy noticeable even among Willows. In narrow-leaved forms of S. nigra "the leaves are of the same color on both surfaces, which are, by the twisting of the petiole, presented almost equally to the light" (Emerson). In Wardi the narrow-leaved forms are more intensely glaucous beneath than those with broader leaves. The aments are longer and more loosely flowered, terminating lateral branchlets, the growth of which is continued from the bud in the axil of the uppermost leaf. The capsules are larger, more globose-conical, under a lens minutely glandular and longer pediceled. The statement made when this Willow was first described that in some of its forms the leaves alone, with their ample stipules, might easily be mistaken for S. cordata, finds striking exemplification in Professor Short's specimen in the Gray herbarium, which two no less competent salicologists than Mr. Carey and Professor Andersson have mistaken for "S. cordata angustata." Indeed, it is apparent from the description that this identical specimen served as the type of S. cordata angustata, 1° forma discolor, Andersson (DC., Prod., xvi.², 252). No leaf of genuine S. cordata angustata would have suggested the comparison with S. Bonplandiana, which, as applied to Wardi, is not inapt.

SALIX OCCIDENTALIS, Koch, var. longipes (Andersson), S. longipes, Andersson, *Proc. Am. Acad.*, iv., 53. S. nigra, Marsh., var. longipes, Andersson, *Monog. Sal.*, 22, and DC., Prod., xvi.², 201.—With the exception of transferring longipes from Salix nigra to S. occidentalis (Koch, Commentatio, 16 [1826]), which latter is clearly the type of this southern species of the Amygdalinæ, it is deemed best to leave all the forms grouped by Andersson under S. longipes mainly as they have been arranged by this acute salicologist. The material is not at hand for a thorough and satisfactory revision. Only one important change should be made, and that is to reduce S. Wrightii, Andersson, to a mere forma monstrosa of longipes forma venulosa. The short, densely flowered, thick, curved aments are simply the result of an abnormal contraction of the rachis. A like freak is sometimes observed in S. discolor. The characters drawn from the capsule, believed by the author to be distinctive, are common to allied forms, a fact which the paucity of Professor Andersson's material alone prevented him from perceiving. In various forms S. occidentalis occurs from

*Collections made by Mr. J. D. Smith in the mountains of Guatemala, and which I named Salix Humboldtiana, I now believe might with greater propriety have been referred to S. nigra, var. falcata. But the region was so far within the recognized range of the former, and so far beyond the known limit of the latter, I thought it best to keep on the conservative side. S. Humboldtiana is only a tropical modification of S. nigra, and it is to be expected that on intermediate ground when the two meet determinations as between one species or the other will be more or less arbitrary.

Florida westward to New Mexico, Arizona, the Sierra Nevada Mountains and adjacent portions of northern Mexico.*

Salix Bonplandiana, HBK.—Found growing in a cañon near Tucson, at the base of the Santa Catalina Mountains, by Professors Sargent and Toumey, 1894, not before known to occur north of Mexico. Professor Toumey writes that it is "a frequent tree in the cañons and along the washes in the foot-hills throughout southern Arizona. The bark is dark gray and very rough, more so than that of Salix nigra. I see no reason why this Willow should not extend north as far as the great rim which separates the southern plains from the Colorado plateau. The leaves of the previous year do not fall until the flowers of the following spring are fully out." This habit of the aments appearing in the axils of the leaves of the preceding year's growth is one taken on more or less by all Willows which invade warm countries, but it is particularly noticeable in the case of S. Bonplandiana.

Rockford, Ill. *M. S. Bebb.*

Foreign Correspondence.

London Letter.

I HAVE just returned from visiting some of the great gardens of Scotland and have brought home with me memories of the delightful and distinct phases of plant-life that luxuriate in that cool and moist climate, and which we cannot attain to in the south. The most striking effects one sees on the great estates are those produced by the Chilian Tropæolum speciosum, which brightens the walls of almost every cottage with a mantle of intense vermilion blossoms, which are not infrequently intermingled with the yellow Canary creeper, a charming mixture. And all this beauty is obtained with little or no trouble, as the moist climate is exactly adapted to the plants; yet we in the south do all we can to coax the Chilian native into healthy growth, generally with but indifferent success. We sometimes succeed by planting it against a wall facing north, where, of course, it is always in shade; but it wants sun and a moist cool atmosphere. This is one of the most attractive plants in Scotch gardens in August, but a host of others that like similar conditions help to make the gardens gay. Violas especially flourish to perfection, and marvelous collections, as those in Forbes' nursery garden at Harwich, produce color-effects that few other plants are capable of. Roses are flowering as luxuriantly now in the north as with us in the middle of July, and many of the open air plants that here are past before August sets in are in perfection there now. It is thus easier to obtain the best color-effects in August and September in the north than it is in the south.

To relieve the monotony of the shrub-border during the flowerless period is no easy matter, but lately I have seen some happy results from introducing some of the bolder types of perennials in a thinly planted shrubbery. This week I saw a mass of Verbascum phlomoides, with its dense columns of pale yellow bloom, from eight to ten feet high, rising out of a mass of Spiræas which, since their flower time, were an insipid group. I have rarely seen so striking an effect. Other instances of brightening shrubberies were made by groups of the tall Aconitum autumnale, eight feet high, single-flowered Hollyhocks, various American Helianthuses, Cimicifuga racemosa and the taller Solidagos, all of which are suitable for combining with shrubbery if planted in sufficiently bold masses. In some of the Scotch woods I saw, beneath the great ruddy boles of Scotch Pines, broad, spreading masses of the Evening Primrose, Œnothera Lamarckiana. The effect of this golden glow of color in the shade was most pleasing.

It is sometimes a difficult thing to make shrubberies attractive after midsummer, and until some fortunate discovery is made of autumn-flowering shrubs we must trust for flowers among them to the methods already described. We have, indeed, a few late summer-flowering shrubs, as Hydrangea paniculata, which is especially effective when associated with some bright-tinted shrubs. I have just seen a large mass of it, the clusters of bloom a foot in length, with a broad margin of that lovely new Spiræa, Anthony Waterer, the most brilliant form of the Spiræa Japonica. In a garden on the south coast I recently saw the crimson Fuchsia Riccartoni taking the place of the Spiræa with the happiest result.

These combinations of different colors of shrubs and flowers are valuable in proportion to the harmony of their various tints. If women, with their acute taste in matters of color, possessed a broad knowledge of plants they would be among the most successful practitioners in gardening of this kind. In some formal garden beds beautiful effects are obtained here from masses of Carnations of harmonizing tints. A strong combination recently noticed was of pure white and chrome-yellow carnations, the great mass of these flowers surrounded by a broad band of the scented oak-leaved Pelargonium, its foliage just the right tone of green to combine with the yellow and white. Great improvements have been made in artistic and decorative gardening during the past few years in England, much of which is due to the good examples in public parks, and public taste has also been considerably influenced to an appreciation of proper color-schemes by the displays in Kew Gardens. Private gardeners come a distance of several hundred miles to visit the national garden and to carry into practice in private gardens the suggestions received here. The result is that the rows of scarlets, yellows, blues and similar crude and painful mixtures are giving way to more pleasing combinations.

It is now a common remark that there is a picturesque Kew and a scientific Kew, and I have never heard any one venture an opinion that the more decorative element has in any way interfered with the strictly botanical one.

Kew. *W. Goldring.*

Plant Notes.

Liriodendron tulipifera.—At this season, when the foliage of many trees begins to grow dull, the broad glossy leaves of the Tulip-tree are conspicuous for their cleanness and purity of color. It has been urged against this tree that many of its leaves fall in late summer and early autumn, not in sufficient numbers to injure the appearance of the tree, but enough to litter up the grass and make a lawn untidy. The fact seems to be that in very dry weather the tree has the habit of allowing part of its leaves to ripen and fall, so that those which remain are abundantly supplied with moisture and keep their freshness until autumn, when they all turn to a pure light yellow, which makes a pleasing contrast to the deeper colors of the Oaks and Maples. The tree itself is one of the largest in our forests, not infrequently reaching a height of one hundred and fifty feet, and specimens whose trunks girth twenty to twenty-five feet, breast-high, are still to be seen. The tall, straight and massive trunk of a forest-grown Tulip-tree, with ashy color, fine texture and regular ridges and furrows of its bark, is not excelled in grandeur by any feature of our woods. A tree growing in the open fields, well furnished with branches to the ground, is equally beautiful, and in any situation it justifies the judgment of Downing that this is the most stately of our forest-trees. When comparatively young it is a tree of great refinement of expression, and it is one of the very best of trees for avenue planting, and its Tulip-like flowers add to its beauty in June. The common name, Tulip Poplar, is possibly derived from the fact that its leaves, borne on long slender petioles, quiver in the wind like those of the Aspen. Although it was introduced into England two centuries and a quarter ago, and has been largely planted in Europe, very few garden varieties have become established. The

* The typical Salix occidentalis is Cuban, and marked mainly by being more or less cinereous-pubescent, but forms of var. longipes from southern Florida (= forma gongylocarpa, Andersson) present an evident transition from the more northern var. longipes to the West Indian type.

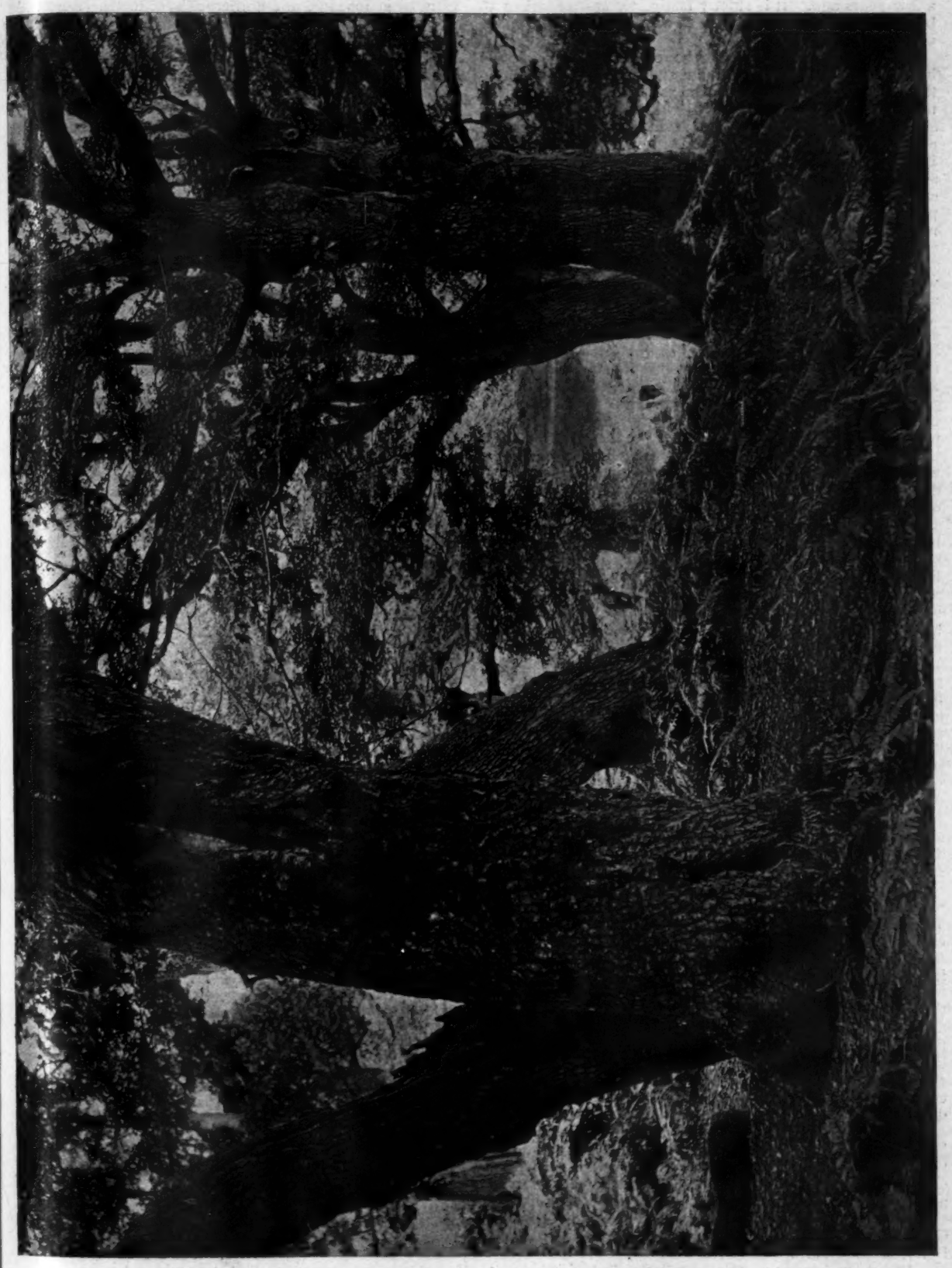

Fig. 51.—Oaks in Sherwood Forest.—See page 366.

most interesting one was sent out from a German nursery a few years ago. It is strictly fastigiate, and promises to be useful wherever trees of a slender columnar form are needed.

Ericas.—Few of these can be classed among strictly hardy plants in our north-eastern states, but in many situations several of them seem to be as much at home as our native plants. Last winter was a trying one for many shrubs, but the Ericas endured the season fairly well and are now well in bloom in the Arnold Arboretum. The Heaths do not like the shade or drip of trees, but on some such place as a sheltered tussock in a meadow in full sunshine they probably could be naturalized. While they like peaty soil they will do well in a deep sandy loam if it is not too wet. E. vagans, E. Tetralix, Calluna vulgaris and its varieties are now in bloom.

Hibiscus coccineus.—This southern plant, which grows wild in the swamps on the coasts of Georgia and Florida, attains a height of from five to seven feet in cultivation, and bears great numbers of flowers, which are more conspicuous both for size and color than those of any other herbaceous Rose Mallow. The bright red corolla is often eight to ten inches across, and even more, and the appearance of the plant in full bloom is strikingly beautiful. Single specimens grow into erect pyramidal shape with one central stalk, but, since the foliage is rather scanty, the plants may be set somewhat closely, and in this way they make most effective groups. The deeply cleft leaves, as well as the stems, have a bluish tint, which adds to their distinct appearance. Of course, this species is not thoroughly hardy in this latitude, but the root can be safely stored during the winter in a cellar or under a greenhouse bench, and it is certainly worth this extra attention. It has been known to winter safely out-of-doors as far north as Philadelphia. It may be added that plants grown from seed raised in northern gardens will endure the winters better than those which come from the south, and this is true of many other plants which come from warmer climates.

Pentstemon campanulatus.—This beautiful Mexican species is rarely seen in our gardens; perhaps, because it is not quite hardy. The plant is as easily raised from seed as any of our common garden annuals. If the seeds are sown in March the plants will begin to bloom in July. Mr. Cameron, of the Harvard Botanic Garden, notes the fact that many of our tender native species of Pentstemon make a better display in late summer and fall by raising them annually from seed. The flowers of P. campanulatus vary in color; some of the plants have flowers of a pink shade, while others have dark purple and violet flowers. The specimen before us has a tubular or campanulate corolla of a red-maroon color, and the petals are whitish on the inside. The flowers are produced in long showy raceme-like panicles, which are nine to fifteen inches long. The plants are three feet high, and the stems are thickly covered with dark green, ovate, lanceolate, serrated leaves. It grows best in a light rich soil and in a position where it is not shaded.

Ipomœa Learii.—Among the tropical Morning Glories, this is, perhaps, the best and most floriferous. The flowers are fully four inches across, produced in great profusion throughout the summer and autumn months. They are intensely blue, slightly purple in the throat; the color is a most pleasing one, and the lasting quality of the flowers is considerable. The inflorescence, a compound fascicle, produces from twelve to thirty almost stalkless flowers in succession, and the axillary peduncles are eight to ten inches long. The cordate leaves are occasionally imperfectly three-lobed, but mostly entire, six inches long on slender, equally long petioles. The twining stem is very slender and somewhat hairy. This species, although a native of Ceylon, often goes by the name of Mexican Morning Glory, a name properly belonging to the nearly related Ipomœa rubro-cœrulea. It can be propagated by means of cuttings very easily in this country. Rich fibrous soil is most satisfactory, but comparatively small pots are sufficient even for large and floriferous specimens. A northern or western position, in diffused sunlight, is preferable to any other, as the flowers in such a position will last till late in the afternoon. Ordinary summer temperature is quite sufficient, and the plant is well adapted to outdoor use on trellises, on walls or verandas, where its hundreds of flowers will make a gorgeous and effective display. Plants used during the summer for such purposes may be cut back before the fall frosts commence, and should be stored in a somewhat dry state until the following season in a cool greenhouse or a light and frost-free cellar.

Cultural Department.

Notes on Hardy Perennial Plants.

At this time Cedronella cana has showy spikes of purplish flowers. It is a neat hardy plant from Mexico, and a small bed eighteen inches wide by three feet long is very attractive. The height of the plants varies from two to three feet, and the square stems have ovate-oblong fragrant leaves. A light warm soil and a sunny position suits them well. Young plants are very easily raised from seed sown in spring.

The prettiest and showiest Malvaceous plant in bloom is Callirrhoë involucrata. It is a dwarf prostrate perennial, and although some of the descriptions say the stems only grow two feet long, under good conditions here they are more than five feet long. The stems are thinly clothed with rounded leaves, which are five-parted and the segments incisely lobed.

The flowers are produced singly in the axils of the leaves. The hairy peduncles are from four to six inches long, and the large, showy, purplish flowers are two inches across. This Callirrhoë makes an excellent rock-garden plant, where its long prostrate stems can hang over rocks, and in such a position its flowers are seen to the best advantage. When this plant gets a congenial situation it blossoms continually all summer. A light rich soil and plenty of light is necessary for the welfare of this plant. Here we have to protect the old plants with a good deep covering of leaves in the winter. Young plants which are raised from seed in spring make a good display in summer if the seeds are sown in March and planted out in May.

Some of the blue-flowered Aconites are valuable fall-flowering perennial plants. They help to break up the monotony of yellow shades which are so plentiful in the garden at this time. A. autumnale is a very desirable plant, and one that deserves to be grown by all lovers of hardy perennial plants. It is a distinct and stately plant, attaining a height of four feet or more when well grown. Its stems are thickly covered with thick dark green leaves, which are deeply cut and slightly drooping. The rich bluish purple flowers are produced plentifully in loose panicles, and when large clumps are grown they make a good show. The second row from the back of the mixed herbaceous border is a suitable place for this plant, and it likes a deep rich soil. It has fibrous roots, and is propagated by division in the fall or spring.

The common Monkshood, Aconitum Napellus, is showy at this time with its large terminal racemes of blue flowers. It grows from three to four feet high, and makes a good companion in the borders to the fall-flowering Phloxes. This plant is poisonous, and care should be taken when planting that it is placed in a position where no danger will arise from its presence.

Statice latifolia is admired by almost every person when it flowers profusely and is well grown. Its large, loose, airy panicles of small blue flowers are produced in great abundance. They are often compared to those of Gypsophila paniculata, and are quite as useful when cut for mingling with other flowers. The plants grown in the borders here are large, measuring a yard or more across when they are in bloom, and about a foot and a half high. It is very hardy and requires no protection in winter. When large established plants have to be moved care should be taken that the long thick roots which they make are not broken too much, as the plants do not bloom so well the first year after moving if the roots are destroyed. As the roots go down several feet in the soil, it is beneficial to give them a deep rich one. Seeds are produced plentifully, and young plants are easily raised from them and bloom the second year.

Sedum spectabile, with its massive heads of small rosy purple flowers, is now very effective. This is the handsomest plant of all the hardy Stonecrops. It is so easy to grow, and its needs so easily supplied, that it should be one of our com-

monest fall-flowering perennials. It is an erect plant with stout stems twelve to eighteen inches high, and has broad glaucous leaves. The rosy purple flowers are produced in broad corymbs at the ends of the stems, and they last for several weeks. S. spectabile grows fairly well in shaded positions, but it does best in a sunny place. It will grow in almost any kind of garden-soil, but it produces larger corymbs and broader and longer glaucous leaves when given a deep rich soil.

Catananche cœrulea is a south Europe Composite which has been flowering very freely for several weeks. The flower-heads are blue, and borne singly on stalks which are nearly two feet long. The flowers are produced plentifully on strong healthy plants, and they last well when cut. There is a form in bloom now which has flowers of a blue and white color, and is known as C. bicolor. Both are good border plants and grow in any ordinary garden-soil. In spring they are easily raised from seed, and the plants bloom the following summer.

Harvard Botanic Garden. *R. Cameron.*

GEUM MONTANUM, a European species of Avens, is conspicuous in late spring with its wealth of large, bright yellow erect flowers, each an inch and a half across, borne on long leafy stems well above its tufted dark green foliage. In ordinary soils the plant thrives well and blooms abundantly, forming broad, slowly spreading tufts.

Geum miniatum is a charming plant, growing nine to fifteen inches high and producing bright glowing orange flowers in few-flowered clusters, each individual flower being about three-fourths of an inch in diameter. The plant forms a low-tufted mass of light green foliage and thrives well in all situations tried. G. coccineum, or Chiloense, cannot be trusted either in its typical forms or its double and various-colored varieties in the neighborhood of Boston, owing to spring rot.

Most of the Oriental Poppies are through blooming by early July, and the Iceland and Alpine Poppies are not happy in the scorching summer months, except in cool situations. A species, therefore, that will carry on the bloom during this interval is especially desirable, and Papaver strictum fills the requirements. A native of the higher portions of the Altai Mountains, it forms with us a many-stemmed plant of dense growth, with densely hairy, glaucous foliage and branched flower-stems rising to a height of eighteen inches, with a constant succession of saffron or deep flesh-colored flowers, making a brave daily show up to noon on hot days and continuing to bloom until mid-September. Though hardly adapted for cutting, on account of its fugacious petals, as a border plant it is unique. It has proved a good perennial and perfectly hardy. I first had it under the name of P. croceum, but importations of P. strictum seed from a reliable source produced the identical plant.

Malva alcea, the Hollyhock Mallow, bears flowers of a clear rich pink, devoid of any traces of purple. Plants which produce flowers of medium size and in succession are not common in gardens, and therefore this is a desirable species. It is of European origin, making a large, broad, densely branched bush, four to five feet high and as much through. It comes into bloom in early June and continues up to late September. Individual flowers are an inch and a half across, of rich clear pink, and borne in clusters on every branchlet. It is so seldom that catalogue promises of persistently flowering plants are fulfilled in actual practice that I am glad to say that there has not been a day between the dates named when I have not been able to pick an abundant quantity of flowers from a single specimen of this plant in my border.

As I saw Geranium armenum last year both at Geneva and Brussels, as well as in Kew Gardens, it seemed the best of all the species of Cranesbill. The plant formed a vigorous clump, with good foliage and showy flowers, which were borne in flat clusters. Each flower was about an inch across and of a brilliant red color. This is said to be a constant bloomer, even into the fall.

Echinacea angustifolia is now in perfection, forming moderately bushy, self-supporting plants some two to three feet high. In many respects this species is preferable to E. purpurea, the purple Cone-flower, since its petals do not recurve as they do in the latter species. The flowers are three inches or more in diameter, well opened, and vary in color from rich purple to pure white in its various forms. The stems are long and slender, not as stiff as in E. purpurea, and much better adapted in consequence for cutting purposes. The species is a native of Wisconsin and southwards and blooms from July to September.

The double White Campion, Lychnis vespertina, until late years seems to have been quite lost to cultivation. We are indebted to Europe for the ordinary single form, where it is a common meadow plant. The flowers are pure white, an inch and a half across, very double and quite fragrant during the early evening hours. The plant has a compact bushy habit, about two feet high, and consists largely of flower-stems. In good soils, where there is little danger of drought, it is in constant bloom from early June to late September. No plant in my entire collection gives more general satisfaction than this. The only weak point that I can name is that when severely affected by drought the foliage becomes infested with a rust, which, however, does not injure the flowers. The remedy of good culture is so simple that this disease is of little moment.

Reading, Mass. *J. Woodward Manning.*

Cannas.

FEW bedding plants give as much satisfaction as the modern French Canna. Cannas are easily cared for in winter, easily started in spring, and with good, rich soil are almost a certain success. The general characteristics of the florists' Canna are so well marked that, although scores of new varieties are introduced every year, it is quite easy to include all the best in a selection of twenty. There are lacking the trifling differences we find in Roses, Carnations and Chrysanthemums which fix the popularity of one variety above another in different sections of the country. The best crimson Canna is the best everywhere. The same can be said of other colors. In the march of improvement every step is toward a certain ideal which all growers and raisers aim for. The typical Canna should have the terminal truss, or spike, erect and well developed; the flowers should be large; the petals broad and long-limbed, so as to make an evenly rounded flower, standing well out, spreading rather than erect, not bunched, but evenly distributed on all sides of the flower-stem. The new crimson F. R. Pierson comes nearest to this ideal.

Captain Suzzoni, until this season the best light-spotted yellow, is now superseded by Madame Montefiore, the flowers of which are rounder and more evenly placed. Mrs. A. D. Cowing is another fine variety of this color, but much more dwarf than either, and better suited for the front row. Eldorado, one of this season's introductions, is a very fine yellow, with faint spots. It is practically yellow. It has not, however, done well so far as I have seen, so that further trial will be required to properly test it. Should it prove free and vigorous it will be an acquisition. Florence Vaughan, as a dark-spotted yellow, is without a peer. As a bedder it is practically orange, as seen from a distance of twenty-five yards. It shows up well everywhere. In form and the arrangement of its flowers on the spike it is equal to the best type. Madame Dugas is the one variety which, in point of beauty, comes nearest to Florence Vaughan, but the tones are softer and the habit more dwarf. Rose Unique is a free-blooming pink. This is about all that can be said in its favor. It suffers by comparison and should never be massed with other Cannas. Its place should be among subtropical plants.

There is some divergence from the Madame Crozy type, but no decided improvement, and no variety is fit to supplant it, though variations from the Crozy type have given us many handsome varieties. Souvenir d'Antoine Crozy is undoubtedly the best. The scarlet ground is a trifle deeper in tone; the distinct yellow border is fully one-eighth of an inch deep and uniform. A mass of this Canna at Mr. James Farquhar's, of Claredon Hills, Massachusetts, makes a beautiful display. Mrs. Fairman Rogers, which was honored with a silver medal by the Massachusetts Horticultural Society, has proved disappointing so far as I have seen. It was shown from plants grown indoors as a giant Crozy, with a wide yellow border. Planted out it is in no way superior to Madame Crozy. Still further deviation from the Crozy type shows a wide and irregular yellow border, denoting the influence of the yellow varieties in the breeding. Queen Charlotte is the handsomest of these that I have seen; the yellow and the crimson in it are about equally divided. Next comes Vanden Berg, Junior, with scarlet in place of the crimson ground; the petals are broad and the arrangement of the flowers good. As a bedder this is a striking novelty of medium height and sturdy growth. Madame Bouvier is similar to the last named, but a foot taller.

We have some fine varieties of scarlet and orange shade. Paul Bruant is a scarlet, extremely rich in tone, with broad, wavy, satiny petals and a large well-developed spike. Mrs. J. M. Samuels is another good variety, with large, broad petals, of bright orange-red color. It is a fine grower. Helen Gould is a large, loose-petaled, orange-red, with a peculiar crystal-like lustre, which is perfectly charming.

Among orange shades it is unique. General Mirabel is also orange-red. It is compact in habit and dwarf, and for this reason it is well adapted for the front row. Sunshine is a lustrous orange, in the way of Paul Marquant, but more dwarf. Both these varieties are better under glass, their flowers scorching easily under bright sunshine. There are few good varieties among vermilion shades; C. H. Molis and Columbia are the best. The latter has probably the largest truss of any known Canna, but is not of good form, being irregular and bunched.

There has been great improvement among crimson shades during the past few years. Alphonse Bouvier was a wonder. We had never seen anything equal to it. When Charles Henderson was introduced last year it was doubted whether it could possibly be an improvement on Alphonse Bouvier. It did not get strong enough last year to establish its claim, but this year it is everywhere in grand form. We have another Canna this season even better in form and nearer the ideal. As a crimson I do not consider it quite as good as Charles Henderson. The petal limbs are yellow, forming what would appear to be a yellow tube, and the staminate petal is also yellow, which, to my mind, detracts rather than enhances its value.

In dark-leaved varieties we should expect little improvement in the size of the flowers, since they are used principally as foliage-plants, but advance in size and color of the flowers has been as great as in the green-leaved varieties. I consider J. D. Cabos the most beautiful of all. The habit is sturdy and free. The spike is neatly formed and free from laterals; the color is clear orange. President Carnot is a giant and a grand foliaged plant. C. Vaughan carries a spike of scarlet flowers equal in size and form to any green-leaved variety.

Wellesley, Mass. *T. D. Hatfield.*

Notes from Cornell University.

Fruit Rot.—The fruit rot, Monilia fructigena, on plums and peaches is more prevalent than usual the present season in this vicinity. Many trees that gave promise of a good crop have lost half or more of their crop by this fungus. Generally the fruit alone suffers, but there are many instances this fall, especially in early peaches, in which the foliage is attacked also. The fungus causes the leaves to become discolored and die. It has been shown by Craig (Bulletin 23, Central Experiment Farm, Ontario), that the rot can be lessened by spraying with Bordeaux mixture after the blossoms fall, and that two or three applications are needed during the season, the last being with ammoniacal copper carbonate a few days before picking.

Russian Apricots.—The Russian Apricots at the station bore a full crop. The following varieties were in fruit: Gibb, Budd, Alexander, Nicholas and Catherine. All of these varieties are too small and the quality too poor to compete with other apricots. The Gibb, Alexander and Budd are the best. The Catherine is worthless, being very dry, and the Nicholas splits badly.

Prunus Simoni.—While Prunus Simoni has the reputation of being a light bearer, our trees were overloaded this summer, and had to be thinned. The fruit began to ripen about July 20th, and continued till August 15th. It is but little attacked by curculios, but is quite susceptible to rot. The use to which P. Simoni can be put is not yet clear. The fruit as grown here is not edible, having a peculiar flavor, somewhat like oil of almond, and though cooking lessens this flavor, it does not make it a palatable sauce. We have not tried P. Simoni for a grafting stock, and until we know more of the general habit of the tree it cannot be wholly condemned.

Cornell University. *G. Harold Powell.*

Isotoma longiflora is a West India perennial plant, allied to the Lobelias, which deserves more attention than it usually receives. It is at its best when raised from seed sown indoors, for it makes a considerable growth before flowering time. The flowers are snow-white, at least an inch across, with a long corolla tube, making them altogether distinct and showy at this season. Seed is produced abundantly.

Caladium argyrites is well known as a useful little plant for greenhouse decoration, growing continuously through the winter without any rest if it has a suitable atmosphere. It can also be used successfully as an outdoor bedding plant, if it can have the benefit of partial shade. The bulbs are so small that they ought to be started into growth before they are set out in the open ground. It is easily multiplied; indeed, few of the Caladiums increase as rapidly, since every little shoot, if it has but a small piece of the bulb attached, will make roots when put into coarse sand and become a good-sized bulb in the course of a month or so.

Botanic Garden, Washington, D. C. *G. W. Oliver.*

Correspondence.

Origin of the Name Sambucus.

To the Editor of Garden and Forest:

Sir,—In a note in a recent number of your paper reference is incidentally made to the etymology of the word Sambucus, which, according to all botanical works that attempt to explain the meaning of genus names, is derived from σαμβύκη, a Greek name, of Syriac origin, for an ancient musical instrument. This statement is an error that needs correction.

Sambucus as a name for a species of Elder dates back only to about the eleventh century, and is a badly corrupted word.

Chapter cxlviii. of the *Herbarium of Apuleius*,* a work supposed to have been written in the fourth century, is devoted to the virtues and uses of the plant σάμψυχον. In a tenth-century Anglo-Saxon translation of this work, the translator identifies this plant as the Elder. Such identification, although erroneous, was accepted, and the word passed into the plant lists of the eleventh, twelfth, thirteenth and succeeding centuries of the middle ages as a gloss for "Ellen" and "Eller" (the Anglo-Saxon and Middle English names for the Black or common Elder), in the corrupted forms Samsuchon, Samsuhton, Sambucus, Sambucum, Sambuca and Sabuca. The form Sambucus was adopted by the ante-Linnæan botanists for the different species of Elder, and has been perpetuated to the present day. The work of Apuleius is founded in great part upon the Materia Medica of Dioscorides, whose office of military physician carried him to different countries and enabled him to embody in his work a considerable number of plant synonyms from various languages. Among such names foreign to the Greek tongue is the word σάμψυχον, which is of Coptic origin, and means, according to Rossi, in his dictionary of that language, "Crocodile herb." The plant thus named has been identified by the commentators of Dioscorides as Origanum Majorana.

New York. *W. R. Gerard.*

Rhus Poisoning.

To the Editor of Garden and Forest:

Sir,—You ask for a statement from me as to the poisonous principle in Rhus Toxicodendron. I wish such statement could be made with confidence, but it must be acknowledged that I do not know as much about the matter as I once supposed I did.

In 1882 I communicated to the American Association for the Advancement of Science a paper in which this and some other vegetable poisons were referred to bacteria as the active agents. Early in the following year, among other new species of bacteria, the one supposed to have to do with Rhus poison was named Micrococcus toxicatus and described in the *American Naturalist.*

In the former paper the poison of Mushrooms was stated to belong to two very different agencies. One is a narcotic and the ill effects follow closely after the substance has been swallowed, after the fashion of other true poisons. The other becomes known only after several hours or one or two days. In the first case no lesions of importance are produced; in the second, violent inflammation and ultimate mortification of the intestinal tract occurs. It was the latter to which the agency of bacteria was ascribed.

It is well known that in Rhus poisoning the effect shows only after twelve to twenty-four hours, suggesting incubation. This led me to undertake some studies upon the matter. I put some carefully secured juice of the growing plant upon a marked spot on my arm. Very serious results followed, though I had not considered myself very susceptible to the poison. After twelve hours the spot was slightly reddened; at the end of twenty-four hours it was considerably inflamed and somewhat swollen, but was still nearly confined to the originally infected area. During the next twenty-four hours the inflammation greatly increased and spread widely until nearly the whole forearm became involved. Colorless serum began to exude, first from well-defined papules, then apparently from the entire surface. This serum was transferred to other parts of my body, and in one instance produced similar inflammation.

Minute spherical bodies had been found in the milk-sap of the plant, and similar ones were seen under high magnification in the exuding serum. These were taken to be micrococci. At this time no attempts were made to cultivate them in artificial media, and no other demonstration was had of the

* Herbarium Apulei Platonici quod accepit Escolapio et Chirone Centauro magistro Achillis.

truthfulness of the assumption that the spherical bodies were living organisms. Infection experiments upon myself were discontinued for obvious reasons. But following up the idea of the parasitic nature of the disease (?), applications were made of various germicidal agents, with apparently favorable results. Since that time abundant evidence has been had of the value of carbolic acid—two to three per cent.—in glycerine as a palliative or curative lotion.

But some studies made a few years later tended to discredit the agency of bacteria in the case, at least as self-acting parasites. The particles in the milk-sap of the plant were found to be constituents of it, rather than independent organisms. As upon other leaves, there are various kinds of bacteria common on those of Rhus Toxicodendron, but none could be found capable of such effects upon the skin. There are living organisms in great numbers, at least at times, in the exuding serum; but no cultivations from these were successful in securing such as cause inflammation. Here the matter was again dropped. There still seem to be some reasons for supposing bacteria have to do with the irritation, but proof of it must be considered wanting.

Mr. C. O. Boring, of Chicago, himself very susceptible to the poison, is confident that the parasitic theory is the true one. He feels very sure that he has been badly poisoned by simply being in the vicinity of the shrub, without contact with it. The late President Clark, of Massachusetts Agricultural College, unhesitatingly asserted that this method of poisoning was well known, and this seems to be a popular belief. It is said one is much more liable to be thus poisoned if he is perspiring at the time.

If it is true that poisoning actually occurs without contact with the plant, something more subtle and more virulent than any known chemical substance must be assumed. To our senses the air is absolutely free from noxious properties after blowing over the plant. What chemical compound can there be in such air, so infinitesimally charged, capable of such notable results? But the facts in this case should be put beyond controversy before explanations are undertaken. Who can give them so substantiated that a skeptic must believe?

If it proves true that actual application to the skin of the plant, or of its products (aside from any invisible something), is essential to produce the inflammation, the first suggestion of bacteria in the case falls. What then of the apparent period of incubation and of the possible activity of the exudation from infected skin?

It is true the matter ought to be absolutely settled by proper investigation, but it is no trifling affair to experiment upon one's self. There may be some other method of procedure, yet no one knows what without trying. I have not tried.

University of Illinois. *T. J. Burrill.*

Meetings of Societies.

The American Forestry Association.

THE summer meeting of this society was held at Springfield, Massachusetts, on September 4th and 5th, in connection with the American Association for the Advancement of Science. The Hon. G. F. Talbot, of Maine, argued that all worthless lands forfeited by tax sales be permanently held by the state and devoted to the purpose of the production of trees, to which end they are admirably adapted. He spoke of the fire-laws of Maine and stated that the adverse interests of forest-owners was the great obstacle to any reform in controlling forest-fires. Under a sharp competition the land is stripped of everything salable and the refuse left where it happens to fall, and this ultimately becomes, through its inflammability, a menace to all neighboring property.

Mr. George H. Moses, Secretary of the New Hampshire Forestry Commission, reviewed the history of legislative attempts to provide suitable protection to the forests in his state, and spoke of the creation of the present Commission, organized simply to investigate the extent and character of the forest-cover and the general relation of forests to climate, water and health. Much of their energy has been devoted, however, to efforts at convincing lumbermen that it is for their personal interest, as well as that of the state, to introduce less wasteful and destructive methods. They are also striving to preserve the natural beauty of the White Mountain region as a summer resort, since, if this is destroyed, great annual loss will come to the state as a whole. Mr. Joseph B. Walker followed with a description of the present condition of the forests of the same state, especially those in its northern portion. Here large areas are owned by individuals whose sole object is to make the most money in the shortest period, and who have no interest in obtaining a future crop of trees. Everything is cut which can be sold either for lumber or matches. Vast sections are denuded one after the other, and fires in the "slashings" sweep the ground clean after the lumbermen have left. There is a beginning mainly from the sentimental side, to make an attempt to prevent this great destruction, and the fire-laws have been so improved that the selectmen or county commissioners are required to appoint fire-wardens, whose duties include the watching for fires and the summoning of aid to prevent their spread. No penalty for failure is provided, but popular sentiment is being aroused to such an extent as to render the law generally effective. The farmers are beginning to appreciate the necessity of the forests, as these, if properly managed, will furnish them with opportunities for labor during the winter months. At present the farmer labors seven months of the year, and from his farm alone could not derive revenue for the remaining five months.

Mr. Cornelius C. Vermeule, of the New Jersey Geological Survey, read a paper upon forests and rivers, based mainly on observations of conditions within the state of New Jersey, although some use was made of data from Massachusetts, New York and Pennsylvania. His conclusions were that river measurements have failed to indicate any notable effect of forests upon evaporation or upon the very highest or lowest rate of flow. They do show what is quite as important—namely, a more equable flow, fewer floods and shorter periods of extreme low water upon well-forested catchments. Some of Mr. Vermeule's conclusions were called in question by Mr. Fernow as not being applicable beyond the areas studied, and especially because all meteorological measurements are extremely unreliable, due to lack of suitable instruments. Professor J. C. Smock, State Geologist of New Jersey, stated that some of the largest landholdings in that part of the country are in southern New Jersey, where the main source of anxiety is the forest fires. One of them alone burned over and destroyed probably a million dollars' worth of lumber and other property. Such a fire leaves only the bare white sand, destroying even the soil.

A letter was read from Secretary Morton, President of the association, calling attention to the necessity of state legislation to compel the proper care of waste from timber-cutting, in order to prevent forest fires; and of the necessity of co-operation between the United States Geological Survey and the Forestry Division of the Agricultural Department, in order that the forest areas might be properly represented on the topographical maps. He showed that by slight additional expense it would be possible for an expert to classify the woodlands while the map was being made, and obtain the material for a report upon the condition and value of the forests. By this means the completed map would show not only the altitude and slopes of the country, the roads, trails and improvements, but also the character and extent of the timber. Mr. F. H. Newell, Secretary of the association, described the methods of representing wooded areas on the great map of the United States now being prepared, and dwelt upon the benefits which would follow the more accurate designation of timber-lands. By suitable coöperation of the Agricultural Department, it might be possible to concentrate efforts upon the areas covered by the national forest reservations and complete the mapping and description of these within a few years.

Professor Dwight Porter, of the Massachusetts Institute of Technology, discussed the possible connection between the fluctuations of the water-supply in the Connecticut River and forest removal. His general conclusion was that, as far as the flow of the lower river is concerned, there is no proof of permanent injury through cutting of the forests at the headwaters. Sea-coast planting as practiced on the Province lands of Cape Cod was the subject of a paper by Mr. L. W. Ross, of Boston, who described the attempts being made to prevent the shifting sands at the extremity of the cape from injuring the settlements and harbor. He spoke of the various kinds of Grasses and shrubs which have been planted to hold the sands, and of the results attained, and exhibited specimens showing the cutting of the twigs due to the sand carried by the wind.

Mr. R. U. Johnson, of *The Century Magazine*, explained the action of the New York Board of Trade and Chamber of Commerce, and urged the advisability of endorsing the resolution of that body calling for the creation by Congress of a forestry commission, consisting of three persons, empowered to examine into the forest conditions of the country. Mr. Gifford Pinchot, in a paper upon the present condition of the national forests, and the necessity of action in protecting these, also held that, since past efforts of this association had been, in a large degree, ineffectual, that the proper method of procedure was through a forest commission such as that pro-

posed by Mr. Johnson. His views were strongly controverted by Mr. B. E. Fernow on the ground that the time was ripe for action rather than for investigation, and that Congress would be more likely to consider legislation already discussed during the past session rather than take a backward step in the appointment of a commission. After some discussion, and under a suspension of the rules, the following resolution was adopted:

Resolved, That we, this association, join with the New York Chamber of Commerce and Board of Trade in hearty advocacy of the establishment of a forestry commission of three members to make a thorough investigation of the public forest lands and to make recommendations concerning their disposition and treatment, and the Executive Committee is hereby directed to represent the association in support of such legislation.

Notes.

An orchard of more than one hundred trees of the Alligator Pear, Persea gratissima, has been planted by Mr. Kinton Stevens, Montecito, California.

It is stated that the Southern California Acclimatization Association has on its trial-grounds eight hundred species of woody plants belonging to 316 genera and eighty-five different families.

Rev. John Batchelor and Dr. Kingo Miyabe have recently printed in the twenty-first volume of the *Transactions of the Asiatic Society of Japan* an interesting paper on plants used by the Ainos in medicine and as food.

The Minnesota Horticulturist asserts that there is no more desirable small tree for the lawn in that region than the native Choke Cherry, Prunus Virginiana. The foliage is peculiarly rich and healthy; the leaves appear among the earliest in spring, and not only when covered with its fragrant white blossoms, but when drooping under its burden of shining red or dark crimson fruit, it is a noticeable tree anywhere.

A late number of *The Garden* contains a colored plate of a variety of the Siberian Scilla, which is called Multiflora, and seems quite a distinct break from the well-known plant which has shown little tendency to vary in gardens. Some of the flower-stalks portrayed in the plate are eight inches long and bear half a dozen or more large flowers which are rather lighter in shade than those of the type. It is said to bloom very freely and the flowers appear in England three weeks earlier than those of Scilla Sibirica. The variety is also said to have been collected by Mr. E. Whittall in the Taurus Mountains and named by him Taurica.

Professor Hopkins, of the West Virginia Experiment Station, has been making tests with Timothy, and he finds that there are marked varieties of this Grass, some of them early, some of them late, and others showing great differences in size and productiveness of seed. In a paper read before the Society for the Promotion of Agricultural Science at its late meeting at Springfield, he showed that if pure seed of the early variety could be secured it would be of special value to grow with Red Clover, since it would be at the proper stage for cutting when the Clover would have the highest value for hay. There is evidently very much of practical value to be learned from the study of Grasses and Grass seed.

Mr. Isaac Kennedy, of Philadelphia, in speaking of Roses for out-of-door planting at the Pittsburg Florists' Convention, said that the two best hybrid Perpetuals of the year are J. Sharman Crawford and Helen Keller, both introduced by Alexander Dickson & Sons, of Belfast, Ireland. The flower of the first is large and full, a deep rose-pink, with the outer petals tinted with a pale flesh color, and the plant is a strong hardy grower. Helen Keller is a free bloomer of vigorous growth, with flowers large, full, fragrant, rosy cerise in color, and somewhat resembling American Beauty. Among new Polyantha Roses the Pink Soupert is said to be as hardy and free-flowering as the well-known Clothilde Soupert.

We have already noted that great numbers of insects injurious to fruit were killed by the freezing weather in Florida last winter. Unfortunately, the weakened condition of the Orange-trees in that state has left them a prey to other insects from which they suffered little when in health, and the wood-boring beetles are attacking in great numbers those portions of the trees which are not already dead. The remedial treatment recommended is to drive a small wire nail into each hole made by the borer, thus stopping it up and preventing the insect from laying eggs and finishing its work. A long flexible wire, pushed in as far as it will go, is serviceable when the gallery is longer than the nail. In the enfeebled condition of the trees powerful insecticides cannot be used, nor is it safe to smear the bark with any substance which will repel the borers.

The Northwestern Lumberman calls attention to the fact that the magnificent Oak-forests north of the Ohio River, in the central part of the northern states, have largely disappeared. Within the last five years there has been an increasing demand for oak in spite of business depression, more especially for such timber as goes into house-finishing, including plain and quarter-sawed red oak and white oak. The duration of the Wisconsin red oak supply is now pretty plainly indicated, and in the mean time remnants of Indiana, Ohio, Michigan and southern Illinois oak will have disappeared, except in small farm holdings, and the great bulk of the supply will thereafter come from south of the Ohio. Of course, there is oak in all the southern states, but the alluvial bottom-lands must furnish the great bulk of the timber, and as Kentucky and Tennessee and West Virginia are partly denuded, the main supply will soon be derived from the lower Mississippi and its tributaries. If the finest area of oak timber in the world, namely, that north of the Ohio River, has been stripped while the country's population and industries were comparatively small, how long will the remaining supply last when the needs are measured by our future population and industrial development? Walnut is gone; cherry, birch and maple will not last many years, and thereafter the demand for oak will be much greater and will rapidly increase. It must be remembered, too, that oak lands are good for agriculture after the timber is cut, and for this reason the denudation will go on with greater rapidity than on the lands less valuable for tillage. When the tide of emigration sets strongly toward the alluvial areas of the lower Mississippi and its tributaries the hardwood forests will melt rapidly away before the attacks of the farmer. It is for this reason that large holdings of southern oak and other hardwoods are now being secured in the south. After a few years, opportunities for such investments on a large scale will be gone forever.

Grape-fruit from Jamaica is found in some of the best fruit-stores in this city, and while much of it is still quite green and undersized, some is fairly ripened. It sells for $1.50 a dozen. California oranges cost sixty cents a dozen at retail, and lemons find a demand at twenty to fifty cents a dozen. The first Japanese persimmons from Florida retail for seventy-five cents a dozen. Delaware and Maryland peaches are nearly gone, although on Monday the best eastern peaches in the fancy-fruit stores were those from the hillsides of Maryland. These were Late Crawfords and the white-fleshed Stump the World, beautiful specimens of which brought seventy-five cents for a package containing not over three quarts. Selected peaches from New Jersey cost $2.50 a basket. The peninsular peach crop has not been a large one this year, and was below the average in quality, while prices have been comparatively high. Ready sales at good rates are anticipated for the remainder of the New Jersey crop. Plums from the Hudson River section are in small supply, Damsons and Green Gages costing sixty cents for an eight-pound basket. From California are coming the large Coe's Golden Drop, yellow, marked with red dots; the firm yellowish flesh is especially rich and sweet, and this late variety is highly esteemed for canning on the Pacific coast; a five-pound package brings seventy-five cents. Large heart-shaped Kelsey plums cost $1.25 for the same quantity. The prices for California Bartlett pears fell considerably in this city last week when large quantities of the eastern-grown fruit were brought out of cold storage, but extra large firm fruit commanded as much as $1.00 a dozen two days ago, and the best Seckels from the west and from Staten Island sold for thirty cents a dozen. The popular and showy Beurre Clairgeau pears from California cost seventy-five cents. Runyon's Orange Cling peaches of immense size are shown, but though this variety is much thought of in the west, and is said to have a rich, sugary, vinous flavor, as seen here it is leathery, and valuable only for table ornamentation. Later varieties of Cling peaches will continue to reach the east for, perhaps, two months, but Salway peaches, the latest of the free-stones, are already here. Large nectarines, at once delicate and brilliant in coloring, make an attractive display, and some of them are not altogether disappointing in taste to any one familiar with the luxurious product of eastern hot-houses. They sell for thirty to forty cents a dozen. A small shipment of Gros Moroc grapes received from England last Saturday opened the season for this fruit. They retail for $2.00 to $2.50 a pound.